

B. Status of the Claims

Claims 1-31 were filed with the original application. Claims 1-2, 5, 14-15, 17, 20-22 and 31 have been amended herein. A marked copy of the amendment is provided in Appendix A. A clean copy of the pending claims following entry of the instant amendment is provided in Appendix B. The amendments insert the accession number for a deposit of seed of variety I450436. Claims 1-31 are now pending and presented for reconsideration.

C. Rejection of Claims Under 35 U.S.C. §112, Second Paragraph

The Action rejects claims 16 and 27-30 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out the subject matter which Applicants regard as the invention.

(1) The Action rejects claim 16 as indefinite for specifying the corn plant of claim 15 as being male sterile. Applicants respectfully traverse.

Claim 16 depends from claim 15 and therefore incorporates all of the limitations of claim 15, but further specifies the added characteristic of male sterility. The claim therefore contains a reference to the claim from which it depends, contains a further limitation of the subject matter claimed in the main claim; and incorporates all elements of the claim from which it depends. The claim is therefore in proper dependent form pursuant to 37 C.F.R. §1.75(c) and is not confusing. The claim is further authorized pursuant to 35 U.S.C. §112, fourth paragraph. The claim is therefore fully definite and in compliance with the statutes.

In view of the foregoing, Applicants respectfully request removal of the rejection.

(2) The Action rejects claims 27-30 on the same basis as claim 16, but with respect to single gene conversions. Applicants respectfully traverse.

It is noted that the instant claims also contain a reference to the claim from which they depend, contain a further limitation of the subject matter claimed in the main claim, and incorporate all elements of the claim from which they depend. The claims are therefore fully definite and in compliance with the statutes. Removal of the rejection is thus respectfully requested.

D. Rejection of Claims Under 35 U.S.C. §112, First Paragraph – Written Description

The Action rejects claims 16 and 24-31 under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to convey that Applicants were in possession of the claimed invention. Applicants respectfully traverse.

The specification fully describes the structural characteristics of claimed hybrid plants having inbred corn plant I450436 as one parent. For example, the specification provides a detailed description of hybrid 8018717, which was produced with I450436 as one inbred parent. Table 5 of the specification gives the morphological traits of 8018717. Further, the SSR marker profile and isozyme marker profile for hybrid 8018717 are given in Tables 8 and 9, respectively. This information, combined with the descriptions of the genetic and morphological characteristics of I450436 in the specification, as well as the fact that any hybrid derived from I450436 will contain half of its genes from I450436, is more than adequate to provide a description of hybrid plants and seeds derived from corn plant I450436 in compliance with the written description requirement.

The specification further provides an SSR genetic marker profile of I450436 in Table 6. Because corn plant I450436 is an inbred corn plant, all hybrid plants having I450436 as a parent will contain these SSR genetic markers and thus will be genetically distinct and identifiable from any other corn plant on this basis. That is, because I450436 is an inbred corn plant, all hybrid corn plants derived therefrom will inherit half of the genetic material of corn plant I450436.

The Federal Circuit has noted that such shared identifiable structural features possessed by members of a genus is important to the written description requirement. *The Regents of The University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1568; 43 USPQ2d 1398, 1406 (Fed. Cir. 1997) (noting that a name alone does not satisfy the written description requirement where "it does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, *as one can do with a fully described genus, visualize or recognize the identity of the members of the genus*" (emphasis added)). Here, all of the members of the claimed genus of hybrids having I450436 as one parent share the structural feature of having the genetic complement of I450436. One of skill in the art could thus readily identify the members of the genus. The written description requirement has therefore been fully complied with.

The Action also rejects claims to single locus conversions of corn plant I450436 on the basis that I450436 may allegedly be altered in any of its traits and that the specification does not describe single locus conversions and transgenes that have the ability to alter any given maize plant trait. In response, it is first noted that the relevant claims are directed to corn plant I450436 which further comprises a single locus

conversion. Such a "single locus converted (conversion) plant" is defined at page 22 of the specification as follows:

[p]lants which are developed by a plant breeding technique called backcrossing wherein essentially all of the desired morphological and physiological characteristics of an inbred are recovered in addition to the characteristics conferred by the single locus transferred into the inbred *via* the backcrossing technique. A single locus may comprise one gene, or in the case of transgenic plants, one or more transgenes integrated into the host genome at a single site (locus).

Therefore, the claimed plants comprising a single locus conversion possess "essentially all of the desired morphological and physiological characteristics of [the single gene converted plant]." Applicants have more than adequately described such a plant that comprises essentially all of the desired morphological and physiological characteristics of corn plant I450436 by way of the descriptions of I450436. To hold otherwise would be to limit Applicants to that subject matter described *ipsis verbis* in the specification. This position is expressly contradictory to Federal Circuit precedent. *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (stating that the written description requirement does not require an applicant to "describe exactly the subject matter claimed, [instead] the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed" (citations omitted)).

The rejection also ignores the substantial description in the specification supporting single locus conversions of I450436. For example, at pages 30-32, the methodology for creating single locus converted plants is described. At pages 31-34, numerous single locus traits for creation of single locus converted plants are described, such as those conferring male sterility, waxy starch, herbicide resistance, resistance for bacterial, fungal, or viral disease, insect resistance, male fertility, enhanced nutritional

quality, industrial usage, yield stability, and yield enhancement. Many of these traits are also described in PCT Application WO 95/06128, the disclosure of which is incorporated by reference in the current specification. The specification also provides examples of genes conferring male sterility, including those disclosed in U.S. Patent No. 3,861,709, U.S. Patent No. 3,710,511, U.S. Patent No. 4,654,465, U.S. Patent No. 5,625,132, and U.S. Patent No. 4,727,219, the disclosures of which were also incorporated by reference in the current application.

At pages 30-32, detailed methodology and compositions are described for introducing male sterility into inbred corn plant I450436, including the use of one or more male-fertility restorer genes. Examples of such male-sterility genes and corresponding restorers are given by way of U.S. Patent Nos. 5,530,191, 5,689,041, 5,741,684, and 5,684,242, each of the disclosures of which were incorporated by reference in the current application. Methods for selection of dominant single locus traits are also described at page 32, for example, such as a herbicide resistance trait.

Further described at pages 32-33 of the specification is the preparation of transgenic single locus conversions, including those created by electroporation (U.S. Patent No. 5,384,253), electrotransformation (U.S. Patent No. 5,371,003), microprojectile bombardment (U.S. Patent No. 5,550,318; U.S. Patent No. 5,736,369, U.S. Patent No. 5,538,880; and PCT Publication WO 95/06128), *Agrobacterium*-mediated transformation (U.S. Patent No. 5,591,616 and E.P. Publication EP672752), direct DNA uptake transformation of protoplasts (Omirulleh *et al.*, 1993) and silicon carbide fiber-mediated transformation (U.S. Patent No. 5,302,532 and U.S. Patent No. 5,464,765).

The use of a single locus trait conferring resistance to the herbicide glyphosate is described at page 34, including a herbicide resistant EPSPS mutation termed *aroA* (U.S. Patent 4,535,060), as well as a mutant maize gene encoding a protein with amino acid changes at residues 102 and 106 (PCT Publication WO 97/04103). Methods for the use of these single locus conversions are also described. Further described, are numerous other single locus traits for preparation of single locus conversions, including a selectable marker gene encoding phosphinothricin acetyl transferase (PPT) (*e.g.*, a bar gene), a gene encoding an endotoxin from *Bacillus thuringiensis* (Bt), and the waxy characteristic, each of which are well known to those of skill in the art. Still further, the specification describes, at pages 35-36, an example of the origin and breeding history of an exemplary single locus converted plant, including all steps necessary for the preparation of the single locus converted plant.

The detailed description of single locus traits and of corn plant I450436 is more than adequate to provide a written description of single locus conversions of corn plant I450436. The specification itself defines a single locus converted plant comprises essentially all of the desired morphological and physiological characteristics of the starting non-converted plant, *e.g.*, I450436. While Applicants have not described every possible single locus conversion that could be introduced into corn plant I450436, this is not required under the written description requirement. *In re Baird*, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994).

The Action also rejects claim 31, which is drawn to a method of producing an inbred corn plant derived from the corn variety I450436 by use of plant breeding steps. The instant written description rejection is not understood, however, as all of the method

steps are fully recited. No allegation has been made that any particular essential step has been omitted or has not been described. Written description must be analyzed with respect to the *claimed invention*. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). Here, all of the steps of the method are recited described in the claim and, therefore, are fully supported by a written description.

In view of the foregoing Applicants respectfully request the removal of the rejection.

E. Rejection of Claims Under 35 U.S.C. §112, First Paragraph - Enablement

(1) The Action rejects claims 16 and 24-31 under 35 U.S.C. §112, first paragraph as not being enabled. Applicants respectfully traverse.

Claims 16 and 27-30 are directed to corn plants of the claimed variety which comprise a single locus conversion or a nuclear or cytoplasmic gene conferring male sterility. The Action alleges that no guidance has been provided for creation of such plants. However, this ignores the working example in the specification describing a single locus conversion that was made with a proprietary corn variety. This example gives the breeding history of the conversion that was made, including a description of seven backcrosses. The example describes exactly the type of process one of skill in the art could use to prepare conversions of the instant variety.

The Action attempts to support the rejection by citing several references alleged to show the difficulty of making male sterile or single locus converted plants. However, no basis has been given to show that these references have any relevance to *corn* plants. Hunsperger deals with petunias; Kraft with sugar beets and Eshed with Tomatoes. No allegation has been made that the references refer to corn plants. The relevance of the

references to the claimed invention has therefore not been established, as is specifically required to establish a *prima facie* case of non-enablement. In view of Applicants example, the detailed teaching in the specification and the failure to provide any basis to doubt the enablement of single locus conversions of the claimed variety, Applicants respectfully request removal of the rejection.

Claims 24-26 are directed to hybrid corn seeds and plants grown therefrom which have the claimed variety as one parent. Applicants specification describes the creation of hybrid plant 8018717, which was produced with I450436 as one inbred parent. This working example provides a full enablement of the claims and no basis has been provided to conclude otherwise.

It is further noted that anytime the claimed variety is crossed with a second corn plant, a hybrid is produced. Therefore, all that is required to enable the production on hybrid corn plants is that variety I450436 be fertile, which it is, as evidenced by the working example described above. The Action therefore provides no basis to doubt this enablement. Removal of the rejection is thus requested.

Finally, claim 31 is directed to a method of producing an inbred corn plant derived from the corn variety I450436 that comprises the recited plant breeding steps. Again, all that is required to complete this method is for the claimed variety to be fertile and for one of skill in the art to follow the recited steps. Any second corn plant may be employed in the method. What other plant or plants one chooses to cross with the claimed variety is therefore *completely irrelevant to enablement*, as any fertile corn plant could be used to produce an inbred corn plant derived from the corn variety I450436. Enablement only requires that one of skill in the art be able to *make and use the claimed*

invention without undue experimentation. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). The specification has done this and thus fully meets the requirement.

In view of the foregoing, removal of the rejection is respectfully requested.

(2) The Action rejects claims 1-31 under 35 U.S.C. §112, first paragraph, for lack of a seed deposit.

In response, Applicant notes that a deposit of 2,500 seeds of the variety I450436 was made with the ATCC. The deposit was made in accordance with the terms and provisions of 37 C.F.R. §1.808 relating to deposits of microorganisms. The deposit was made for a term of at least thirty years or at least five years after the most recent request for furnishing of a sample of the deposit is received by the depository or for the effective life of the patent, whichever is longer. A declaration certifying that the deposit meets the criteria set forth in 37 C.F.R. §1.801-1.809 is attached hereto under **Appendix C**.

The rejected claims have each been amended, either directly or by way of dependency upon an amended claim, to recite the accession number for those seeds of the inbred corn plant I450436 which have been deposited with the ATCC. The claim amendments do not narrow the claims and accordingly Applicant does not intend to disclaim any subject matter through the amendments. The specification has also been amended to include the accession number of the deposit and the date of deposit.

In light of the foregoing, Applicant respectfully requests removal of the rejection under 35 U.S.C. §112, first paragraph.

F. Rejection of Claims Under 35 U.S.C. §102(b)/103(a)

The Action has rejected claim 31 under 35 U.S.C. §102(b)/103(a) as allegedly anticipated or, in the alternative, obvious over a prior variety. Applicants respectfully traverse.

In response, it is noted that claim 31 is directed to a method of producing an inbred corn plant derived from the corn variety I450436. The method requires the use of the novel corn variety I450436. The Action has acknowledged the novelty of this variety. The prior art does not teach the variety and, therefore, fails to teach or suggest all elements of the claims.

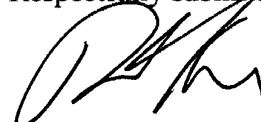
In view of the foregoing, removal of the rejection is respectfully requested.

G. Conclusion

This is submitted to be a complete response to the referenced Office Action. In conclusion, Applicant submits that, in light of the foregoing remarks, the present case is in condition for allowance and such favorable action is respectfully requested.

The Examiner is invited to contact the undersigned at (512)536-3085 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



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APPENDIX A: MARKED VERSION OF AMENDMENTS

In the specification:

Please replace the paragraph beginning at page 5, line 12, with the following:

-- The invention also concerns seed of the inbred corn variety I450436. A sample of this seed has been deposited under ATCC Accession [No. - - - -] No. PTA-4495. The inbred corn seed of the invention may be provided as an essentially homogeneous population of inbred corn seed of the variety designated I450436. Essentially homogeneous populations of inbred seed are those that consist essentially of the particular inbred seed, and are generally free from substantial numbers of other seed, so that the inbred seed forms between about 90% and about 100% of the total seed, and preferably, between about 95% and about 100% of the total seed. Most preferably, an essentially homogeneous population of inbred corn seed will contain between about 98.5%, 99%, 99.5% and about 99.9% of inbred seed, as measured by seed grow outs. This corresponds to current commercial practice among the leading companies in the seed industry.--

Please replace the paragraph beginning at page 10, line 18, with the following:

-- In still yet another aspect, the present invention provides a method of producing an inbred corn plant derived from the corn variety I450436, the method comprising the steps of: (a) preparing a progeny plant derived from corn variety I450436, wherein said preparing comprises crossing a plant of the corn variety I450436 with a second corn plant, and wherein a sample of the seed of corn variety I450436 has been deposited under ATCC Accession [No. - - - -] No. PTA-4495; (b) crossing the progeny plant with itself or a second plant to produce a seed of a progeny plant of a subsequent generation; (c) growing a progeny plant of a subsequent generation from said seed of a progeny plant of a subsequent generation and crossing the progeny plant of a subsequent generation with itself or a second plant; and (d) repeating steps (c) and (d) for an addition 3-10 generations to produce an inbred corn plant derived from the corn variety I450436. In the method, it may be desirable to select particular plants resulting from step (c) for continued crossing according to steps (b) and (c). By selecting plants having one or more

desirable traits, an inbred corn plant derived from the corn variety I450436 is obtained which possesses some of the desirable traits of corn variety I450436 as well potentially other selected traits.--

Please replace the paragraph beginning at page 22, line 17, with the following:

-- **I450436:** The corn plant variety from which seeds having ATCC Accession [No. - - - -] No. PTA-4495 were obtained, as well as plants grown from those seeds.--

Please replace the paragraph beginning at page 29, line 8, with the following:

-- A representative deposit of 2500 seeds of the inbred corn variety designated I450436 has been made with the American Type Culture Collection (ATCC), 10801 University Blvd., Manassas, VA on [(_____, ____)] June 25, 2002. Those deposited seeds have been assigned ATCC Accession [No. - - - -] No. PTA-4495. The deposit was made in accordance with the terms and provisions of the Budapest Treaty relating to deposit of microorganisms and was made for a term of at least thirty (30) years and at least five (05) years after the most recent request for the furnishing of a sample of the deposit is received by the depository, or for the effective term of the patent, whichever is longer, and will be replaced if it becomes non-viable during that period.--

In the claims:

1. (Amended) A seed of the corn variety I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - -] No. PTA-4495.
2. (Amended) A population of seed of the corn variety I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - -] No. PTA-4495.

5. A corn plant produced by growing a seed of the corn variety I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - - -] No. PTA-4495.

14. (Amended) An essentially homogeneous population of corn plants produced by growing the seed of the corn variety I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - - -] No. PTA-4495.

15. A corn plant capable of expressing all the physiological and morphological characteristics of the corn variety I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - - -] No. PTA-4495.

17. (Amended) A tissue culture of regenerable cells of a plant of corn variety I450436, wherein the tissue is capable of regenerating plants capable of expressing all the physiological and morphological characteristics of the corn variety I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - - -] No. PTA-4495.

20. (Amended) A corn plant regenerated from the tissue culture of claim 17, wherein the corn plant is capable of expressing all of the physiological and morphological characteristics of the corn variety designated I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - - -] No. PTA-4495.

21. (Amended) A process of producing corn seed, comprising crossing a first parent corn plant with a second parent corn plant, wherein one or both of the first or the second parent corn plant is a plant of the corn variety I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - - -] No. PTA-4495, wherein seed is allowed to form.

22. (Amended) The process of claim 21, further defined as a process of producing hybrid corn seed, comprising crossing a first inbred corn plant with a second, distinct inbred corn plant, wherein the first or second inbred corn plant is a plant of the corn variety I450436, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - -] No. PTA-4495.

31. (Amended) A method of producing an inbred corn plant derived from the corn variety I450436, the method comprising the steps of:

- (a) preparing a progeny plant derived from corn variety I450436 by crossing a plant of the corn variety I450436 with a second corn plant, wherein a sample of the seed of the corn variety I450436 was deposited under ATCC Accession [No. - - - -] No. PTA-4495;
- (b) crossing the progeny plant with itself or a second plant to produce a seed of a progeny plant of a subsequent generation;
- (c) growing a progeny plant of a subsequent generation from said seed and crossing the progeny plant of a subsequent generation with itself or a second plant; and
- (d) repeating steps (b) and (c) for an additional 3-10 generations to produce an inbred corn plant derived from the corn variety I450436.